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22850	7590	04/02/2009	EXAMINER	
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			TAMAI, KARL I	
			ART UNIT	PAPER NUMBER
			2834	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/583,718	Applicant(s) CHARTON ET AL.	
	Examiner KARL I.E. TAMAI	Art Unit 2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-42 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 20-42 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 June 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/25/2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference characters not mentioned in the description: 50, 55. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference characters in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the pivots with rounded ends, the two pivots comprising one arm positioned lateral to the flexible electrode, the two pivots being the two arms on either side of the flexible electrodes, the control means for each potential difference between the flexible electrode and each fixed electrode, the dielectric layer formed on the electrodes and the means for forming a

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pivot, and the dielectric layer on the moving electrode must be shown or the features canceled from the claims. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification. Particularly, there are reference numbers from the drawings are not described in the detailed description of the invention, such as reference number 50 and 55, for example.

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4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The examiner suggests "ELECTROSTATIC MEMS COMPONENTS WITH A PIVOT ENABLING SIGNIFICANT VERTICAL DISPLACEMENT".

Claim Rejections - 35 USC § 112

5. Claim 30 element "control means for means for each potential difference between the flexible electrode and each fixed electrode" is a means (or step) plus function limitation that invokes 35 U.S.C. 112, sixth paragraph. However, the written description fails to disclose the corresponding structure, material, or acts for the claimed function.

Applicant is required to:

(a) Amend the claim so that the claim limitation will no longer be a means (or step) plus function limitation under 35 U.S.C. 112, sixth paragraph; or

(b) Amend the written description of the specification such that it expressly recites what structure, material, or acts perform the claimed function without introducing any new matter (35 U.S.C. 132(a)).

If applicant is of the opinion that the written description of the specification already implicitly or inherently discloses the corresponding structure, material, or acts so that one of ordinary skill in the art would recognize what structure, material, or acts perform the claimed function, applicant is required to clarify the record by either:

(a) Amending the written description of the specification such that it expressly recites the corresponding structure, material, or acts for performing the claimed function

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and clearly links or associates the structure, material, or acts to the claimed function, without introducing any new matter (35 U.S.C. 132(a)); or

(b) Stating on the record what the corresponding structure, material, or acts, which are implicitly or inherently set forth in the written description of the specification, perform the claimed function. For more information, see 37 CFR 1.75(d) and MPEP §§ 608.01(o) and 2181.

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claim 29 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification does not enable one arm positioned laterally of the flexible electrode being two pivots.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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9. Claims 20-22, 27, and 29 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Hallbjorner et al. (Hallbjorner)(US 2002-0191897). Hallbjorner teaches an electrostatic actuation device having a flexible, mobile, electrode 210 with a first and a second end 413, 423; with the actuator having first and second fixed electrodes 415, 425, fixed relative to the substrate 499; and means for forming two pivots (or arms) 405, 408 of the flexible electrode, located between the first and second ends 413, 423 of the flexible electrode, each fixed electrode 415, 425 being located, while the device is operating, opposite a section of the flexible electrode 411, 421 located between one of the means for forming two pivots 405, 408 and the end of the flexible electrode closest to the means for forming two pivots 413, 423. The flexible electrode including load 402 forming a switch with electrode 409. The pivots 405, 408 are blocks attached to the substrate.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

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not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hallbjorner et al. (Hallbjorner)(US 2002-0191897) and Clark et al. (Clark)(US 6384952). Hallbjorner teaches every aspect of the invention except the flexible electrode connected to a mirror membrane by a block. Clark teaches an electrostatic actuator with the moving electrodes connected to a mirror membrane by a block 540 to provide superior optical (col. 5, lines 60-65). It would have been obvious to a person of ordinary skill in the electrostatic actuator art to construct the actuator of Hallbjorner with the flexible electrode connected to a mirror membrane by a block to provide superior optical characteristics from the electrostatically controlled actuator, as taught by Clark.

13. Claims 25, 26, 30, 36-39, 41, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hallbjorner et al. (Hallbjorner)(US 2002-0191897) and Miller et al. (Miller)(US 2002-0171327). Hallbjorner teaches every aspect of the invention except the pivots providing motion perpendicular to the substrate (vertical), an insulating layer on the substrate, control means for each potential difference between the fixed and flexible electrode, applying a potential difference to the lateral part of the flexible electrode to move the portion between pivots up and down, or specific application of potential differences of claims 37 and 38 for the two fixed electrodes and the mobile

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electrode. Miller teaches the flexible electrodes 16 can be used to provide vertical displacement (Figures 15A-15C). Miller teaches a dielectric layer (116) between the flexible electrode 16 and the fixed electrodes 110 to prevent short circuiting (paragraph 0110). Miller teaches the actuator connected by the flexible electrodes can be operated (inherently with a control means) together or independently to control the tip and tilt of the platform (0118). It would have been obvious to a person of ordinary skill in the electrostatic actuator art to construct the actuator of Hallbjorner with the vertical displacement of Miller to provide a controllable tilt/tip actuator, and with a dielectric layer on the substrate to prevent short circuiting of the moving and fixed electrodes, as taught by Miller, or with the controller providing a potential difference between the first fixed electrode and the mobile electrode is decreased, and if the potential difference between the second fixed electrode and the mobile electrode is increased, the mobile structure tips gradually towards the first fixed electrode, if the potential difference between the first fixed electrode and the mobile electrode is increased, and if the potential difference between the second fixed electrode and the mobile electrode is decreased, the mobile structure tips gradually towards the second fixed electrode, if the potential difference between the first fixed electrode and the mobile electrode is decreased, and if at a same time the potential difference between the second fixed electrode and the mobile electrode is decreased, the mobile structure moves down to the substrate, along an axis, if the potential difference between the first fixed electrode and the mobile electrode is increased, and if at a same time the potential difference between the second fixed electrode and the mobile electrode is increased, the mobile structure rises by moving

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away from the substrate, along the axis to provide tip and tilt actuator of the platform as suggested by Miller.

14. Claims 28 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hallbjorner et al. (Hallbjorner)(US 2002-0191897) and Nanjyo et al. (Nanjyo)(US 6900915). Hallbjorner teaches every aspect of the invention except the block having a rounded end. Nanjyo teaches a pivot 4 in an electrostatic actuator having a rounded end (2a1) to maintain the position of the electrode about the pivot (col. 8, line 45-50). It would have been obvious to a person of ordinary skill in the electrostatic actuator art to construct the actuator of Hallbjorner with the block pivot having a rounded end to prevent the movement axial movement of the electrode, as taught by Nanjyo.

15. Claims 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hallbjorner et al. (Hallbjorner)(US 2002-0191897) and Fan et al. (Fan)(US 5805375). Hallbjorner teaches every aspect of the invention except flexible electrode formed on a separate substrate and pivots formed on the second substrate. Fan teaches electrostatic actuator can have the rotor/mover formed on a separate substrate from the stationary elements (figures 3a-3c) to allow batch fabrication (col. 2, line 32). It would have been obvious to a person of ordinary skill in the electrostatic actuator art to construct the actuator of Hallbjorner with flexible electrode formed on a separate substrate because Fan teaches electrostatic actuators can be formed in batches with separate substrates for moving parts, and pivots formed on the second substrate to

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simplify production and assembly for a stationary pivot, and because it has been held that to rearrange parts of an invention only involves routine skill in the art. *In re Japikse*, 86 USPQ 70.

16. Claims 32 and 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hallbjorner et al. (Hallbjorner)(US 2002-0191897) and Fan et al. (Fan)(US 5,805,375), in further view of Goldsmith (US 6608268). Hallbjorner and Fan teach every aspect of the invention except forming an insulating layer on the mobile electrode and forming an insulator on the fixed electrodes and the means for forming a pivot. Goldsmith teaches covering all electrodes on the stator with an insulator to prevent shorting (figure 11) and providing an insulating layer on the membrane (moving electrode) to prevent shorting (figure 12). It would have been obvious to a person of ordinary skill in the electrostatic actuator art to construct the actuator of Hallbjorner and Fan with an insulating layer on the mobile electrode or the fixed electrode and pivot to prevent shorting of the moving electrode with the to prevent short circuits between the electrodes, as taught by Goldsmith, and with the insulating layer on the pivot means to simplify production by deposition on all the projections above the substrate, as shown by Goldsmith.

17. Claims 34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hallbjorner et al. (Hallbjorner)(US 2002-0191897) and Fan et al. (Fan)(US 5,805,375), in further view of Clark et al. (Clark)(US 6384952). Hallbjorner and Fan teach every aspect of the invention except the flexible electrode connected to a mirror

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membrane by a block. Clark teaches an electrostatic actuator with the moving electrodes connected to a mirror membrane by a block 540 to provide superior optical (col. 5, lines 60-65). It would have been obvious to a person of ordinary skill in the electrostatic actuator art to construct the actuator of Hallbjorner and Fan with the flexible electrode connected to a mirror membrane by a block to provide superior optical characteristics from the electrostatically controlled actuator, as taught by Clark.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl I.E. Tamai whose telephone number is (571) 272 - 2036.

The examiner can be normally contacted on Monday through Friday from 8:00 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mrs. Quyen Leung, can be reached at (571) 272 - 8188. The facsimile number for the Group is (571) 273 - 8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Karl I Tamai/
PRIMARY PATENT EXAMINER

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March 31, 2009